

# **NextGen: Designing the Next Generation of Affordable Housing for Australia**

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Architecture Laboratory (SIAL) at RMIT, Melbourne*



**Residents of Sydney, both buying and renting, endure levels of housing stress equal to the worlds highest. The NextGen Housing Masters Studio will address the growing housing affordability crisis in Sydney through the agency of architecture and its capacity to transform.**

## **1 Foreword**

Our subject is the design of NextGen: the next generation affordable Australian home, and the (re)generation of vibrant neighbourhoods. Australia currently has the least affordable housing of anywhere in the world and a patchy record with urban design.

UTS students will be transforming a medium scale vacant/derelict inner city neighbourhood in Sydney and experimenting with design typologies, materials and construction, density and vibrancy, cultural shift strategies, modes of ownership, amenities, actionable neighbourhood design and city integration.

The most striking examples of housing in Australia show ingenuity – but often ingenuity which is serving lifestyles, rather than formalistic predilections. NextGen will tighten up and hone the argument, both in terms of the urban rationale and the passion for the home.

The scale of the design problem demands radical solutions. For example, Pritzker panellist Alejandro Aravena's "half-built" housing (Chile), Urban Ecology Australia's Christie Walk with shared amenities and food gardens (Adelaide). The era of fat plots of land for single dwelling urban homes is long over, but badly designed higher density apartments have resulted in ugly, ill-considered schemes, poor neighbourhood integration and a lack of vibrancy.

Fundamental to this course is a commitment to the socio-cultural transformative capacity of architecture. To provoke and facilitate design excellence, the course has contributions from a number of external experts. It will be jointly run with SIAL, the ground breaking lab at RMIT established by Mark Burry – and there will be several exchange visits and peer reviews between students.

## **2 Discourse**

### **A history in 400 words**

Just 30 years ago, the ability to afford a home was almost considered a right among Australians. Home ownership was known as The Great Australian Dream. The relationship with land and home ownership here has always been strong. Things started to change in the 1970's as land in the cities offered increasingly attractive returns for development. This saw the rise, quite literally, of taller and denser blocks of units on land previously occupied by 19<sup>th</sup>

and early 20<sup>th</sup> century detached and terraced housing. Neighbourhoods were being transformed and money was being made.

But by the late 70's there were neighbourhood revolts as leafy residential districts experienced rising populations and nature was concreted over. In Sydney, the turning point came with local protests in Woolloomooloo and Glebe. Things got serious: one community leader who disappeared was rumoured to have become part of the foundations of a Sydney flyover. Development slowed down and conservation of older, housing stock became the norm. Many old dwellings had preservation orders put on them regardless of how poorly they were designed and constructed.

Meanwhile, suburbs sprawled relentlessly into the fire-prone bushlands around Sydney and Melbourne. By the 1980's people with property were on a role – speculative development was rife and everybody seemed to be an aspiring developer. Things never really cooled off since then.

Fast forward to the present day and we have a triple whammy of problems still driving house prices upwards: housing demand outstrips supply as Australia's population continues to grow; local and state zoning effectively causes land rationing in the cities; the conservation of older buildings limits brown-field development opportunities and poor transport infrastructure and amenities impact on growth in the suburbs.

### **Quantity and fugliness**

A whopping 40% of housing in Australia was built in the last 40 years. With today's population predicted to almost double by 2050 the burgeoning demand for housing will continue. For Australia to cope with such population increase current housing stock will need to double in number over the next 40 years.

Despite this construction frenzy, less than 1% of homes in Australia are designed by architects. Tim Winton's 2010 book of photographs and essays, entitled "Small town", laments the acceptance of 'fugly' buildings by Australians, claiming that this is almost a wilful celebration of ugliness. Winton says that this could be excused by the early settler-frontier nature of many towns, were it not for the fact that some of these places have been occupied for 200 years and still look like a dog's dinner. Interestingly, Winton also notes that the most offensive housing are typically the ones where the most money has been lavished on them.

In presenting the course, we used a series of quotes from critics and some of Australia's most respected architects: Harry Seidler, Ken Woolley, David Saunders, Robin Boyd, Charles, Duncan, Guilford Bell.

*"Overseas architects and town planners have been scathing about most of our modern.. buildings."*

*"We are being forced to abandon the Australian attitude of one house for one family, on its own little plot of land, and move into flats. The change has, on the whole, been architecturally disastrous."*

*"The spirit of modernism never really penetrated here – only shallow imitations and pompous notions that there is such a thing as a uniquely Australian architecture."*

*"For the general mass of Australian housing, apart from comfort standards, the only word is 'rubbish'; "but there is hope because a new generation of students is better educated and puts culture and process over style.."*

Shockingly, although topical right now, these quotes date from around 1970. It begs the question of what exactly has been happening in the intervening 40 years? And how can we make sure these quotes aren't relevant in another 40 years?

## **The state of affordability**

Housing is affordable when households are able to pay housing costs (whether renting or buying) and still have sufficient income to meet other basic needs. The problematic of low housing affordability oscillates between the resident, the market and the state and is characterised by struggles between quality-of-life aspirations and living costs, land scarcity and proximity and housing demand and supply. 'Housing affordability affects the ability to maintain social diversity in our communities and the ability of essential service workers to live close to work.'

At present, Australian housing is the least affordable on this planet, ranking 6.3 on the affordability index compared with 5.3 in the UK and only 3.2 in the USA. Average earnings in Australia are \$62,000 and the average unit price in Sydney is \$425,000. The simple fact is that most Australians entering the workforce today will never own their own home and will find renting in their preferred location an impossibility.

## **Designers to the rescue?**

So the simple way out of the problem is to commission more work by architects, right? Well, this could work but only with the right sort of architecture. An alternate approach is to mindlessly produce smaller spaces and denser neighbourhoods, building with cheaper materials on bad land. We do not condone such an approach, invariably condemning residents to misery when there are smarter ways to get better solutions. And in any event, the affordability crisis is so great that even this crude approach won't work any more.

A better design approach is an architecture that engages with the many relevant issues: socio-economic and neighbourhood, materials and technology, the environment, and form. The hypothesis of NextGen is that architecture can only address the issue of affordable housing in Australia by evolving a design thinking that extends into and embraces multiple criteria with a design-led approach.

One can argue that such design thinking ought to be present in all good architecture. However, even established architects are rarely in control of their brief to the extent that they can address such broad criteria. In NextGen, "a brief is replaced by a practice of scanning reality for situations which have the potential to be acted upon by architecture itself" (Ruby 2007). The course will enable you to work in a way that is both progressive and innovative in terms of an architectural discourse that draws on broad issues and begins to return ownership of the complex brief to the designer. In this sense, the course can be considered to be about transformative learning.

## **3 The course**

The **NextGen** studio initiates with 'chapter studies' of highly focussed research to be examined then deployed over three distinct Studio Phases. An initial research and analytics phase (weeks 1-2) will allow students to define their unique problematic through empirical research and case studies. Each student will then develop a manifesto of intent, and a masterplan that synthesises their problematic with the given site (weeks 3-6). The manifesto will become a strategic tool for informing generative research-through-design processes during the final and lengthiest phase (weeks 8-15) of the semester. Scale, model and media formats are very specific in all phases allowing the course to better facilitate comparative studies between proposals. Throughout the studio process students will maintain their research in a personal 'scrapbook'. Contributing use of the course wiki is also required. The wiki is a valuable tool for peer dialogue between the students at UTS and RMIT.

At UTS, two disruptive / creative interventions will take place into the course. These are outlined below:-

### **Mini towers embedded elective**

In weeks 6 and 7, there is an embedded elective on mini towers. Students with suitable manifestos and masterplans will participate in this as they join students from Adrian Lahoud's Urban Interventions course. The elective is run by visiting architect Jeff Turko from the Architectural Association and Adrian Lahoud from UTS.

### **Disposable cities embedded workshop**

On the 24<sup>th</sup> and 25<sup>th</sup> May, architect Tom Verebes from Hong Kong University will be running a mini workshop. All NextGen students will participate and will be joined by students from the Computational Environments course.

## **4 The Sites**

### **For UTS MArch students**

The site on which we will test architectural ideas is located centrally to Sydney: on the corner of Albion, Riley and Ann Streets in Surry Hills. It measures approximately 5,000 sqm in area and currently sits vacant and excavated with a sandstone foundation. This site has been vacant for many years, during which time the mixed-use neighbourhood has gentrified to an extent although it still has an element of gritty urban realism to it. To all intents, this is a Tabula Rasa conditions.

### **For RMIT architecture, interiors and industrial design students**

The students will be working with the Broad Meadows site in the City of Hume, Melbourne. This area is relatively deprived and the local council is enthusiastic about exploring options for improvement. This is more of an urban regeneration condition.

## **5 Assessment 01 - Research "Chapter studies"**

Assessment weighting: 30%

Each UTS and RMIT student will give their preferences for 2 focussed themes for their chapter study, to be undertaken in the first 2 weeks, working in pairs (in other words: each student will contribute half of each of 2 chapters).

Each chapter group must look for a Sydney precedent that exemplifies the concerns of your chapter heading which we can shortlist for a visit. Please don't choose locations that are too far away (ideally within 2-3km, but certainly less than 10km).

Each research chapter will be presented as a 25 page (plus cover) colour A5 portrait document. This is expected to be dense with information, image and diagram rich, containing extracts and clippings from books, magazines or newspapers. It will also contain written texts from the student with their insights and observations relating to the theme and a critical conclusion relevant to the NextGen brief. The chapters will be bound together to form a single collective research book for the course. An electronic PDF version will also be generated and uploaded onto the Wiki.

The presentation of the research chapters is on Tuesday 16th March. The studio runs from 09:00 - 13:00 that day. Please make sure that you arrive 15 minutes early so that you can load your presentation up onto the computer (slides are best in a single doc PDF landscape format as we know they will run across mac/pc).

For this significant assessment (30% of course total), here is a checklist of what you will need to have completed for the presentation studio:-

1. PDF of your chapter uploaded onto the Wiki
2. A5 portrait bound colour hardcopy of your chapter: 25 pages + cover page
3. A slideshow (5 slides ideally, 10 slides maximum) that summarises the aspects of your chapter, the last slide showing the precedent (see point 4 below)
4. A precedent that exemplifies the concerns of your chapter that we can visit in Sydney

There will be presentations from 22 groups, which means that you'll have exactly 5 minutes each. Make sure you have done a practice-run as we'll have to be brutal with the time keeping.

After the presentations, we'll be giving general feedback discussing the next stage of the project with you.

The Chapter themes are as listed below (note that you can see the RMIT-only themes in the appendix):-

1. **On the philosophy of living**

Stemming from developments in western psychology and the impact of eastern mysticisms on western cultures there has been an emergence of a widespread reconsiderations of questions of how we should live. A philosophy of living is then an intellectual and self reflective approach to what could be once considered more mundane aspects of life.

2. **On Formalism**

Formalism emphasizes form. Compositionally, it is about an interest in the visual relationships between building parts and the work as a whole. Shape is the focus of attention and it leans towards architecture's role in producing functional art-forms. Formalism is made explicit in a great deal of modernist architecture.

3. **On Structuralism**

Structuralism gives buildings and urbanism real intrinsic value. With origins in a splinter group Team 10 from the Congrès International d'Architecture Moderne (CIAM), structuralism is about built structures corresponding in form to social structures. As a reaction to rationalism and functionalism, it promotes architecture as providing social and community participation. One of the greatest structuralist architects is brutalist Herman Hertzberger, and more recently and more eclectically Ralph Erskine and Ted Cullinan. Structuralism takes its cues from social and urban components.

4. **On Industrial construction**

From work of the Bauhaus director Mies van der Rohe, later the Eames House and Roger's Lloyds Insurance Building, modernism in architecture has long been fascinated by industrial construction methods. Modular and prefabricated housing techniques arrived in Australia in the latter half of the 20th Century and period examples include project homes by Pettit & Sevitt, Civic Construction Co., and Merchant Builders. All contemporary architecture uses manufactured components, but what are the extreme options – from automotive production, to IKEA flatpack?

5. **On flexible spaces and modularity**

The standard house is built as a highly static and immovable object, but the people who occupy them are not. Families grow, shrink and change and so do the occupants and their needs. But to alter or renovate a house can be a cost prohibitive, time consuming and highly disruptive exercise. How can we design and construct houses more intelligently, houses that predict and allow for adaptability?

6. **On varying density**

'Sprawl is bad, density is good.' - A contested maxim of contemporary architecture. Densification brings with it many advantages including intensification, proximity, activity, reduced travel energy, shared services and maximisation of land value. But there are great challenges associated with density too - privacy, solar access, ventilation, congestion, building circulation and provision of personal and recreational space. Density pundits such as MVRDV and BIG provide extreme counterpoints to green-field sprawl through their built and hypothetical projects. Australian capital cities will almost double in population over the next 40 years. How can intense

densification increase the capacity of our cities to house this population?

7. **On size**

It's official, the average Australian home is the largest on the planet. What is this obsession with size? Is it required and what is the impact on quality of space, quality of construction, energy consumption, and the use of outdoor (garden) and public space? How can we learn from other space paradigms, such as from the Japanese?

8. **On minimised spaces**

Through spatial efficiency and flexibility a high quality of life can be maintained with a vast reduction in floor area. Projects like Nendo's Drawer House, M-CH by Micro-Compact Home and Micro-flat by Piercy Conner use detailed design to compress domestic spaces to the point of being 'appliances-for-living-in'. Casulo take a different approach where furniture 'nests' like a Russian Doll maximising mobility for a nomadic lifestyle. How can the apartment or terrace typology be reduced and reconfigured yet still meet the needs of the Australian housing market? Can savings in unit-site-costs and materials be transferred to operability and componentry and result in affordable housing outcomes?

9. **On zero energy systems**

Long the dream of environmental architects, the contemporary home can finally achieve energy neutrality, or even produce energy to sell into the grid. The kit of parts is now extensive: solar panels, advanced thin flexible solar films, heat pumps, underground heat exchange systems, trombe walls, thermal mass, recycled materials, superinsulation. Of course, great design helps and passive solar architecture became highly sophisticated in Europe by the 1970's. And remember that the energy to run a typical home exceeds the embodied energy used to build it after less than 10 years.

10. **On Urban agriculture and planting**

The recent re-examination of world energy and food supplies has caused a resurgence in the popularity of localized agriculture. Since 2007 over half of humanity lives in urban environments, so unlike the food movements of the 70s, the new focus on agriculture, horticulture and gardening is primarily an urban phenomenon. It is also linked to movements of food security and a renewed excitement for health benefits of been close to one's food source.

11. **On Advanced materials studies**

The history of modernism is also the history of the failure of new materials. Architecture has clung to glass, steel, concrete and timber in the absence of realistic and durable alternatives, and Australia's love affair with the repulsive fibro sheeting came to an abrupt end with asbestosis fears. But the last 30 years has seen a cornucopia of new and durable materials arrive, often from other industries. Carbon fibre, tension fabrics, phase change, recycled plastics – the list is a long one.

12. **On what makes a neighbourhood vibrant**

The Latin root of the word vibrant means 'to shake back and forth'. A vibrant neighbourhood is one that creates and protects activities supported by a large majority of the population in that neighbourhood. Vibrancy can be created by a complex mix of urban conditions such as density, architectural treatments of entries, and socio-economic and cultural factors.

13. **On housing typologies**

Explorations of typological hybrids that re-conceive the relationship between housing, building fabric and market dynamics. We will take our cues from core-and-shell typologies such as shopping malls and commercial office towers, half-build, multi-key, shop-top and the like.

14. **On the housing market and economics**

Sydney's real estate market is a litmus on the supply and demands of housing for the

city - cost of living, amenity, proximity, supply and demand, build-cost, lending rates and economic stability each shape the property market. Market pressure for larger detached houses with fewer occupants, home theatres, triple garages, formal and informal living spaces work against affordability initiatives. Students working in this cluster will be exploring spatial divisions, densities, and amenity within the context of land values and living costs. Economies of volume and repetition, facade to floor area ratios and emerging construction technologies will be analysed to inform new housing development prototypes.

**15. On developers**

Developers have many rules-of-thumb when establishing the feasibility of a site and project. A dynamic interplay of unit site cost [the cost of land per approvable dwelling], build cost, holding costs and time lines all impact on the success of a project. Developers consistently state they cannot make money developing affordable housing in Australia's capital cities. What makes a developer tick? How can architectural design reduce risk and increase profit in the development of affordable housing?

**16. On procurement models**

Walk into a bank with a 10% deposit and get a mortgage for your low cost home? Yeh, right. With millions of Australians disenfranchised from the middle income financial services, what alternatives are there around the globe? Paradigm shifts do exist such as the Microcredit system pioneered by Mahammad Yunos in Bangladesh – but can this be applied to housing? Leasing, renting, self-build, partial self-build, house sharing, or just ultra low cost materials? If a unit costs \$5,000 does it matter if it only lasts 5 years?

**17. On ownership modes**

Collective models of housing compliment private dwellings with shared spaces and resources, blurring the distinction between public and private realms. Clusters, cultural shifts, bottom-up modes of co-habitation, legal, social and spatial structures each play a part. Focus here will be on the amplification of neighbourly sharing producing new economic, social and spatial possibilities. Collective food and energy production, transport, green and service spaces, child care and so on.

**18. On fugliness**

Should Australian urbanism be tarred and feathered with this term? Sadly, yes. Although only 1% of homes are architect-designed, this studio has to come up with a game-changing approach that gets the public to re-engage with design quality and encourage developers to commission meaningful work. But lets first of all drill deep into the fugly world – what is it? What drives it? Where are the best examples? Can it really be celebrated, or buried?

**6 Assessment Task 02 - Manifesto and Masterplan**

Assessment weighting: 40%

Assessment Task 02 is individual work and focused on synthesising of knowledge gathered in Assessment Task 01 to form a guiding Manifesto and context specific Masterplan. Each student will use Assessment Task 02 to provide focused direction for detailed design over the remainder of the semester.

**Manifesto**

The Manifesto is to be presented as a single A4 page of text. Begin with a Title that boldly states your specific area of concern (eg 'Open Source - Reprogrammable Housing Towers' or 'Micro-strata - Work-live Environments'). Next a paragraph or two that clearly describe the problematic that led you to this title, and goes on to establish where an architectural opportunity lies. Your Manifesto should then go on to declare a series of principles, intentions or ambitions that will provide a generative foundation for your design work over the rest of semester.

## **Masterplan**

Restricted to a single A1 sheet, the Masterplan will be a synthesis of your manifesto and the site. Using diagrams, massing drawings, plans and sections, the Masterplan will demonstrate a formal and spatial approach to your work. The Masterplan should be more diagrammatic than fine drawing, as well as emphasising the qualitative opportunities inherent in your ideas. It will explore subdivision patterns, access, networks and place distribution across the site in plan and in key sections.

Note: Students participating in the Jeff Turko Mini-towers studio will be able to further develop their work from the studio as the basis of their Masterplan.

## **7 Assessment Task 03 - Design Proposal**

Assessment weighting: 30%

For the remainder of the semester you will be developing and refining a more specific design proposal. Your presentation will cover various scales depending on your specific housing typology and site distribution. Presentation formats will include diagrams, plans, sections and elevations, massing and detailed models ('white' models) and photomontages.

Your Design Proposal will be critiqued against a final edit of your Manifesto.

## **6 Studio Phases**

For the studio phases, required outputs and assessment stages, see the course plan. The studio runs from 1<sup>st</sup> March until June 18<sup>th</sup>, 2010, with a final hand-in date for assessment on 23<sup>rd</sup> June.

## **Resources**

REFER TO WIKI FOR READING LIST, WEB LINKS ETC - <http://nextgenhousing.wikispaces.com/>

## **APPENDIX**

RMIT-only chapter research themes. These are intended for students in the additional disciplines.

### **A. On effecting urban cultural and social capital**

Social Capital is a sociological concept that argues for an awareness of the real value of the connections and networks that are created between people and groups of people. It is often viewed in opposition to more tangible things that might bring economic benefit, such as a screw driver, or an objects of desire such as a TV. It also has a less neutral side which sees the varying ability of different classes to build social networks as a less obvious side of class hierarchy. In Urban terms the late and great Jane Jacobs referred to this idea frequently.

### **B. On poetics, intangibility, hidden forces and space**

Atmosphere, light, air, sound, weather, seasons, movement, habitation, daily rituals of usage and so on form intangible topographies within our home. These dynamic and temporal phenomena and forces which activate spaces and our experience of space. Yet the design of houses, or more importantly the lack of design, means that the power and poetics of these forces is largely ignored and lost, resulting in mundane architecture lacking perceptual stimulation, poetics and delight.

### **C. On wet spaces**

The traditional domestic kitchen, bathroom and laundry are expensive and immovable spaces that are highly resistant to change. Many visionary designers and architects, from Buckminster Fuller to Joe Collombo and Dieter Rams, have explored alternative design solutions to these cumbersome service areas. Often the resultant design proposition ended up being a highbrid between product and furniture design, in which



these service areas are treated as discrete and movable industrially manufactured objects. Perhaps it is time to revisit this approach.

**D. On advanced manufacturing technology**

Robotics, CNC, digital and rapid manufacturing and other advanced fabrication technologies are poised to change the world of industrial, product and fashion design; in many ways this has already happened. Most importantly they herald a departure from the economic paradigm of standardisation. What possibilities do these hold for the design and construction of houses?

**E. On indoor climate**

It is estimated that up to 30% of the world's energy needs are associated with the heating, cooling and lighting of buildings. The rapid push in Australia to air-conditioned indoor climates in domestic space is putting ever more pressure on our energy infrastructure and associated production of greenhouse gases. How to treat the indoor climate in a much more passive, intelligent and sensitive manner is a major design question and opportunity.

**F. On neighbourhood amenities**

The western world's modern habit of having all or most amenities within one large household is comparatively unique and stems from a combination of an enlarged sense of individuality, a disconnection from local communities, and a capitalist led desire to sell a large amount of cheap and disposable objects such as washing machines, home theatres, pool tables. With mixed success the post WWII housing crises in Europe created housing that used a mix of shared neighbourhood amenities.

**G. On intelligent systems and prefabrication**

We need not think of the entire house as a prefabricated unit, perhaps only the hidden parts that add so much cost and complexity but are largely independent of architectural style, expression and vernacular. In an era where we expect plug and play from our proliferation of digital devices, the design and delivery of services to and throughout the home such as electricity, gas, data and telephone cabling, hot and cold water, sewerage, heating and air flow belong to another era. This archaic design logic makes the home clumsy to build and inflexible to change and update. Domestic building construction has much to learn from the automotive and electronics industry.

**H. On globalisation**

The term globalization means a lot of things to different people but essentially refers to the remarkable interconnectivity the world's peoples and economies now share. It is a fallacy to suggest that there has not been economic and cultural trade prior to the last 30 years, however a doubling of the world population since the 60s and the combination of internet and cheap travel has allowed a large amount of the world to develop an interconnectedness that is unprecedented in human history. This is having large impacts on migrations and peoples' notions of home.